PAIR TRAWL GEAR CHARACTERISTICS LOG

This log contains detailed questions about the gear fished. Complete a new log for each uniquely configured gear (as defined below) **hauled** during a trip. These unique configurations may be based on changes made to the length of the headrope, mesh size in the codend, *etc.* Any changes in these fields require the completion of another Pair Trawl Gear Characteristics Log. Do not use the COMMENTS section to explain these differences between gears. Number each gear configuration sequentially.

If the gear is set out and hauled more than once during a trip, do not complete a new Pair Trawl Gear Characteristics Log for the multiple hauls. Rather, record on the Trawl Haul Log which gear numbers are being hauled. In addition, record any other information necessary to understand the manner in which the gear was set/hauled in COMMENTS.

If the vessel has two or more identical gears which are hauled during the trip, complete only one Pair Trawl Gear Characteristics Log and record the consecutively assigned numbers of all identical gears described in GEAR NUMBER(S) (#1). See the pair trawl definitions below and GEAR NUMBER(S) (#1) for more information on defining and numbering gears.

If information is unavailable or unknown to any question except a "No/Yes" question, record a dash (-) in the field. If the answer to a "No/Yes" question is unknown, record a "9" on the line next to the code for "No" to indicate that the field was not skipped, but the answer is unknown. If a field relates to a question to which you previously answered "No", leave the field blank.

Become familiar with the following definitions.

DEFINITIONS

Pair Trawl: Two vessels towing a single net. The spread and depth of the net is controlled by adjusting the speed of the boats and the distance between them.
See Figure 1.

Codend: Two rectangular pieces of netting made with heavy twine. The top edges are joined to the narrow end of the bellies, the selvedges are laced together, and a "codline" or codend clip is woven through the lower meshes for securing the section into a bag where the fish are held until released onboard the trawler.

Fishing Circle: The section of the net located behind the wings and before the belly. It is the area which creates the largest opening in the net. See Figure 10.

Headrope: The line, generally of fiber rope or steel wire rope, which fits along the top wings and center part of the square to form the upper lip of the pair trawl.

Fish Outlet: Used in conjunction with an excluder device in order to provide an opening in the net to facilitate escape of fish, sea turtles, *etc.* See Figure 11.

Blowout: Generally made with a lighter material than the rest of the net, these net sections are used for maintaining the net's shape and stability as it is pulled through the water. See Figure 4.

Gear: A trawl, commonly referred to as "the net". This includes the headrope, footrope, floats, weights, netting and any other attached equipment.

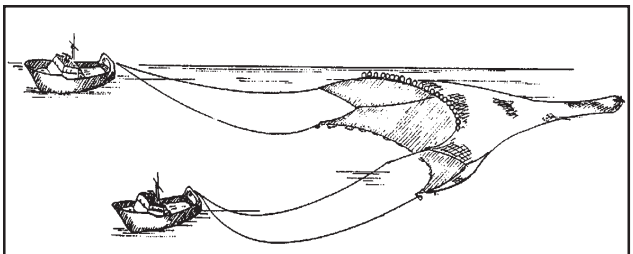


Figure 1. Small boats pair trawling in mid-water.

INSTRUCTIONS

For instructions on completing the Header fields **A, B and D** refer to the Common Haul Log Data section of the NEFSC Observer Program Manual.

GEAR INFORMATION

1. GEAR NUMBER(S): Record the consecutive number(s) assigned to each uniquely configured gear hauled and for which characteristics are described. See the definition of gear in the introduction.

NOTE: If two or more identical gears are used, assign each gear its own gear number and record them on separate Pair Trawl Gear Characteristics Logs with 10 random codend mesh size measurements collected for each codend.

Example: The first gear is "1", and its characteristics will be recorded on one Pair Trawl Gear Characteristics Log. The second gear, although identical to gear "1" must have its own separate Pair Trawl Gear Characteristics Log with 10 random codend mesh measurements collected for that codend.

2. NET NAME: Record the common name of the net. If it does not have a common name, record the manufacturer's name and any other available means of identification.

Examples: Shuman 58 X 54cm Midwater.
Drezen Pelagique 133.8 X 18m.

3. NET BUILDER: Record the name of the company or individual who made this net.

Example: Shuman.

4. YEAR NET MADE: Record the four digit year the net was made.

Example: 2000.

5. GEAR FISHED: Record how this gear is fished by placing an "X" next to the appropriate code:

0 = Unknown.
1 = Pelagic, or in the water column, with the net never coming in contact with the seabed.
2 = Semi-pelagic, or in the water column, with the net seldom coming in contact with the seabed.
3 = Bottom, or with the net constantly in contact with the seabed.
9 = Other, record how the gear is fished on line 5A.

NET

6. CONSTRUCTION: Record the type of net construction (see Figure 2) used in the forward portion of the net by placing an "X" next to the appropriate code:

0 = Unknown.
1 = Rope/Large Mesh.
2 = Parallel Rope Trawl.
9 = Other, record the net type on line 6A.

7. DESIGN: Record the construction design of this net by placing an "X" next to the appropriate code:

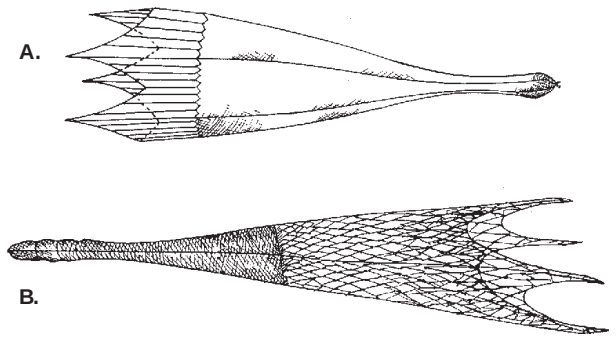


Figure 2. Four-seam mid-water trawls with forepart of (a) parallel ropes, or (b) large mesh size, to decrease water resistance.

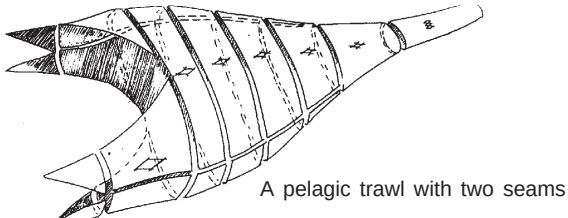
0 = Unknown.
1 = 2 Seam.
2 = 4 Seam, Equal Panels.
3 = 4 Seam, Unequal Panels.
9 = Other, record the net construction design on line 7A.

NOTE: See Figure 3 for illustrations of net designs.

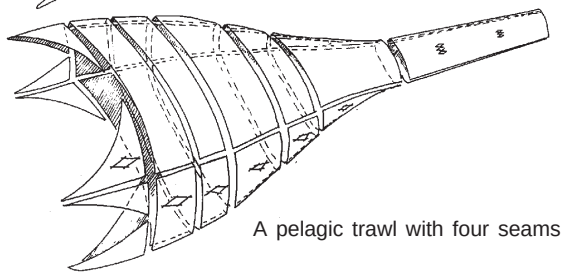
8. MINIMUM MESH SIZE: Record, to the nearest tenth of an inch, the minimum inside mesh measurement in this net (not including the codend). This information may be obtained from the captain.

9. MAXIMUM MESH SIZE: Record, to the nearest tenth of an inch, the maximum inside mesh mea-

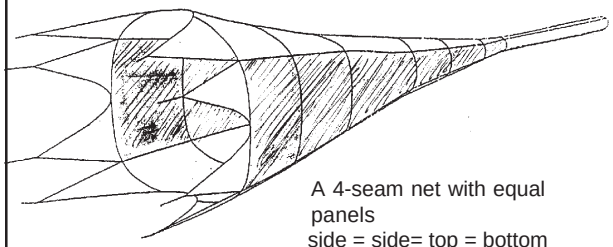
surement in this net (typically found in the forward section of the net). This information may be obtained from the captain.



A pelagic trawl with two seams

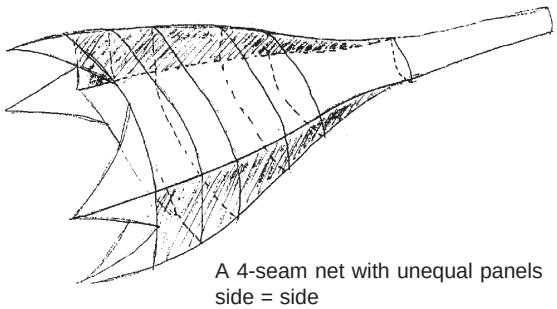


A pelagic trawl with four seams



A 4-seam net with equal panels
side = side= top = bottom

Shaded areas indicate side panels



A 4-seam net with unequal panels
side = side
top = bottom
side ≠ top/bottom

Figure 3. Illustrations of net designs.

WEIGHTS

10. USED?: Record whether weights are used on this gear by placing an "X" next to the appropriate code:

0 = No.
1 = Yes.

11. WEIGHT: Record, in whole pounds, the **total** poundage of **all** weights used on this gear. This information may be obtained from the captain.

12. WEIGHT - ACTUAL OR ESTIMATED: Record whether the weight recorded in #11 is an actual or estimated weight by placing an "X" next to the appropriate code:

1 = Actual.
2 = Estimated.

CONSTRUCTION MATERIAL

13. TYPE: Record the type of construction material used in the body of the net (not including the codend) and the codend by placing an "X" next to the appropriate code:

00 = Unknown.
01 = Nylon.
02 = Poly.
03 = Kevlar®.
04 = Spectra®.
05 = Tenex®.
06 = Nomex®.
98 = Combination, record all construction material types on line 13A.
99 = Other, record the construction material type on line 13A.

BUOYANCY/RELEASE DEVICES

14. FLOATS USED?: Record whether floats are used on this gear by placing an "X" next to the appropriate code:

0 = No.
1 = Yes.

15. BLOWOUT USED?: Record whether a "blowout" section (see Figure 4) is used in this gear by placing an "X" next to the appropriate code:

0 = No.
1 = Yes.

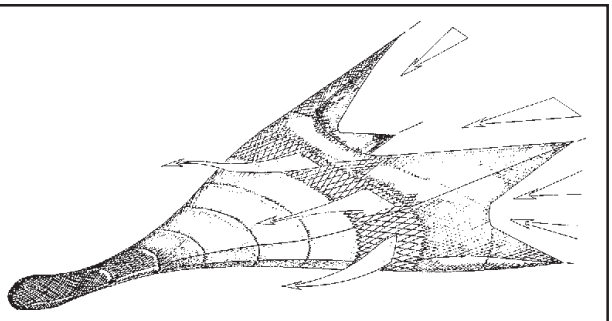


Figure 4. Blowout panel.

16. KITE USED?: Record whether a kite(s) (see Figure 5) is (are) used in this net by placing an "X" next to the appropriate code:

0 = No.
1 = Yes.

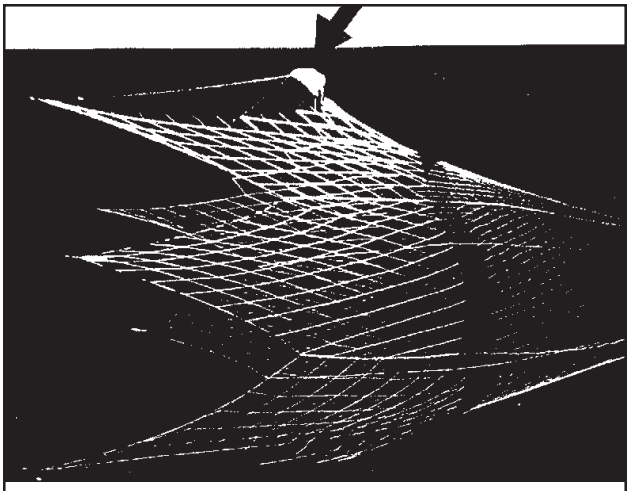


Figure 5. Kite attached to headrope of a pelagic trawl.

KITE PANEL

17. NUMBER: Record the **total** number of panels used in a kite in this net.

18. LENGTH: Record, in whole inches, the average length of the panels used in a kite in this net. This measurement will be taken along the edge of the panel which is perpendicular to the headrope. See Figure 6.

19. WIDTH: Record, in whole inches, the average width of the panels used in a kite in this net. This measurement will be taken along the edge of the panel which is parallel to the headrope. See Figure 6.

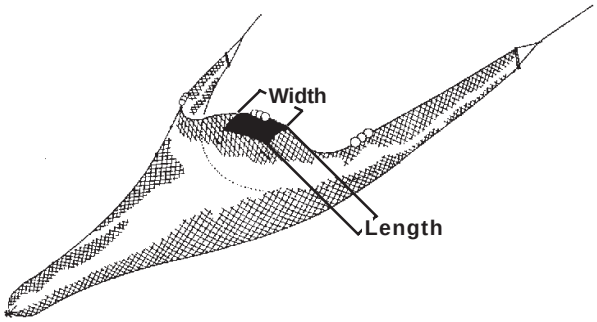


Figure 6. Kite panel measurements .

LENGTH MEASUREMENTS

20. HEADROPE: Record, in whole feet, the length of the rope along the top of the net. This information may be obtained from the captain. See Figure 7.

21. FOOTROPE/SWEEP: Record, in whole feet, the length of the rope along the bottom of the net. This information may be obtained from the captain. See Figure 7.

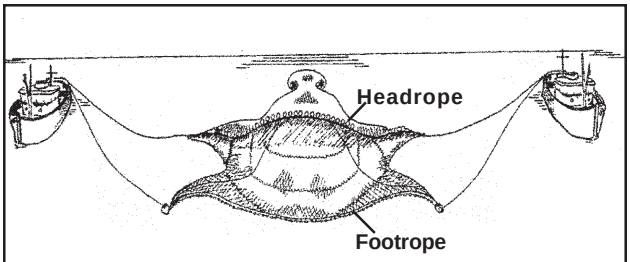


Figure 7. Four seam pelagic pair trawl showing headrope and footrope.

22. TOP BRIDLE: Record, in whole fathoms, the length of the top bridle. This information may be obtained from the captain. See Figure 9.

23. WING BRIDLE: Record, in whole fathoms, the length of a wing bridle. This information may be obtained from the captain. See Figure 9.

24. BOTTOM BRIDLE: Record, in whole fathoms, the length of a bottom bridle. This information may be obtained from the captain. See Figure 9.

BRIDLES

25. BRIDLES PER WARP: Record the number of bridles attached to each warp. This information may be obtained by reviewing the net plans or from the captain. See Figures 8 and 9.

26. BRIDLES PER SIDE: Record the number of wings or bridles found on **one** side (left or right) of the net. See Figures 8 and 9.

27. WARPS PER BOAT: Record the number of warps fished by each boat. See Figures 8 and 9.

FISHING CIRCLE

28. NUMBER OF MESHES: Record the number of meshes in the fishing circle. This information may be obtained from the captain. Do not include the meshes in the gore. See the definition of fishing circle in the introduction and Figure 10.

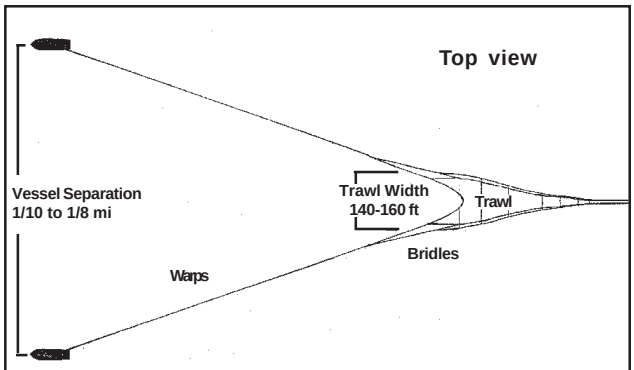


Figure 8. Typical tuna pair trawling configuration.

NOTE: The Shuman pelagic nets generally have no gore meshes. The "French" net may have up to 20% in the gore meshes.

29. MESH SIZE: Record, in whole centimeters, the predominant **inside** mesh measurement from the fishing circle. This information may be obtained from the captain. See the definition of fishing circle in the introduction and Figure 10.

NOTE: See Figure 2 in the Otter Trawl Gear Characteristics Log Instructions for an illustration of mesh measurement.

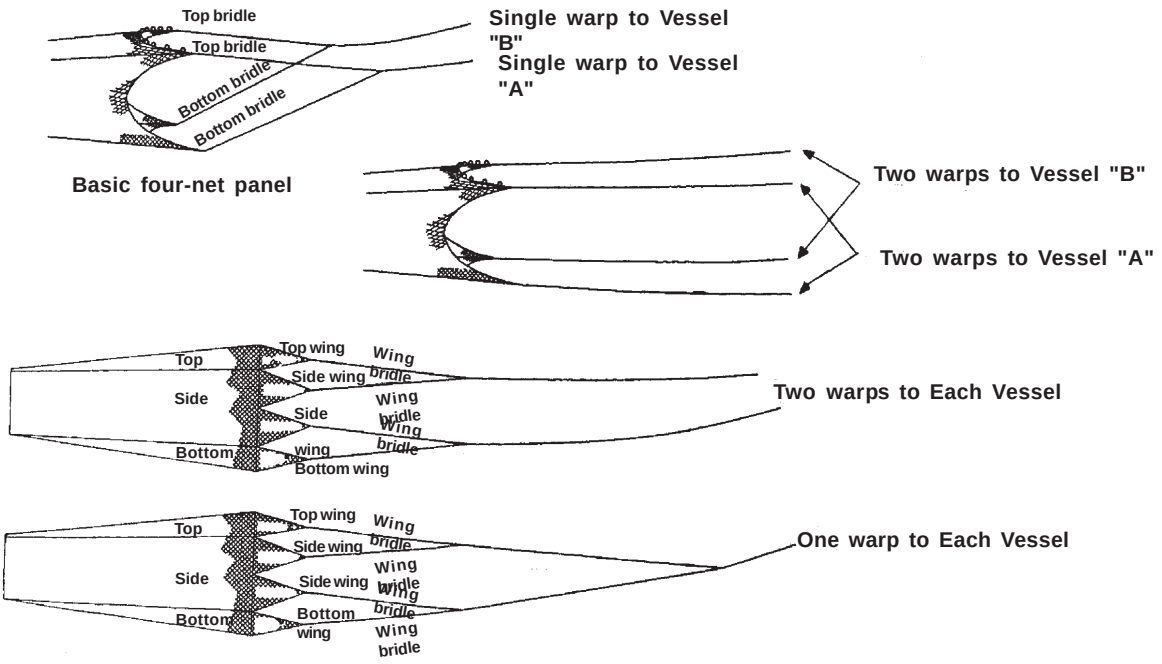


Figure 9. Pair trawl rigging designs showing bridles.

CODEND

30. HUNG: Record the hanging configuration of the codend by placing an "X" next to the appropriate code:

0 = Unknown.
1 = Diamond.
2 = Square.
3 = Square, Wrapped.
8 = Combination, record the hanging configuration in COMMENTS.

NOTE: If the codend is wrapped, this is considered chaffing gear. Be sure to record "Yes" (1) for CHAFFING GEAR USED (#36).

NOTE: See Figure 10 for the location of the codend, and Figure 2 in the Otter Trawl Gear Characteristics Log Instructions for an illustration of diamond and square hanging configurations.

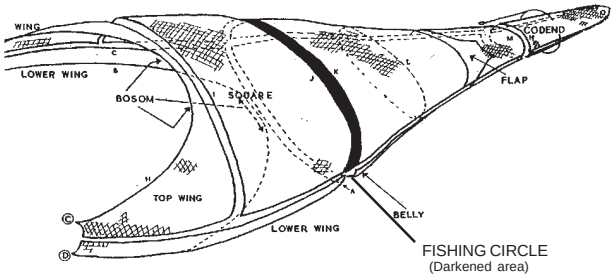


Figure 10. The sections of netting that make a trawl.

31. TWINE TYPE: Record whether the twine used in the codend is single or double stranded by placing an "X" next to the appropriate code:

1 = Single.
2 = Double.
3 = Single on Top/Double on Bottom.
9 = Other, record the twine type in comments.

32. MESH SIZE: Record, in whole millimeters, ten randomly selected **inside** mesh measurements from the codend. These measurements should be taken inside from knot to knot, in the direction in which the mesh is hung. Use calipers for these measurements.

NOTE: These measurements are **not** bar lengths.

NOTE: See Figure 2 in the Otter Trawl Gear Characteristics Log instructions for an illustration of mesh measurement. See also Appendix P. Vernier Caliper Instructions for further information.

33. LINER USED?: Record whether a liner is used in the net's codend by placing an "X" next to the appropriate code:

0 = No.
1 = Yes.

34. MESH SIZE: Record, in whole millimeters, a randomly selected **inside** mesh measurement from the liner in the codend. Use calipers for this measurement.

NOTE: See Figure 2 in the Otter Trawl Gear Characteristics Log for an illustration of mesh measurement. See also Appendix P. Vernier Caliper Instructions for further information.

35. STRENGTHENER USED?: Record whether strengthener material is used in the codend of this net by placing an "X" next to the appropriate code:

0 = No.
1 = Yes.

36. CHAFFING GEAR USED?: Record whether chaffing gear is used on the codend by placing an "X" next to the appropriate code:

0 = No.
1 = Yes.

NOTE: A codend in which the meshes are "wrapped" is considered to have chaffing gear.

GEAR MOUNTED ELECTRONICS

37. USED?: Record whether any transducers are used on this gear by placing an "X" next to the appropriate code:

0 = No.
1 = Yes.

38. NUMBER OF TRANSDUCERS: Record the number of transducers used on this gear.

39. TYPE: Record the type of transducer used on this gear by placing an "X" next to the appropriate code:

0 = Unknown.
1 = Wired.

2 = Wireless.

40. BRAND: Record the brand of transducers used on this gear by placing an "X" next to the appropriate code:

0 = Unknown.
1 = Furuno®.
2 = Simrad®.
9 = Other, record the transducer brand on line 40A.

41. LOCATION: Record the location of transducers used on this gear by placing an "X" next to the appropriate code:

0 = Unknown.
1 = Headrope.
2 = Wings.
3 = Footrope.
4 = Headrope and Footrope.
8 = Other Combination, record the transducer locations on line 41A .
9 = Other, record the transducer location on line 41A.

42. NUMBER OF RECEIVERS: Record the **total** number of receivers used on **both** vessels for the transducer(s).

EXCLUDER/SEPARATOR DEVICE

43. USED?: Record whether an excluder or separator device (see Figure 11) is used on this gear by placing an "X" next to the appropriate code:

0 = No.
1 = Yes.

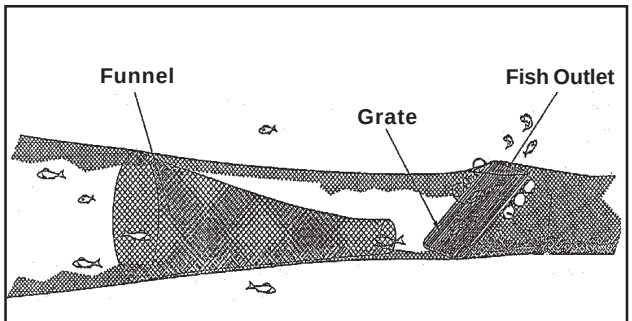


Figure 11. Funnel and Nordmore Grate with a fish outlet.

44. TYPE: Record the type of excluder or separator device used on this gear by placing an "X" next to the appropriate code:

0 = Unknown.
1 = Nordmore Grate (see Figure 11).
2 = T.E.D.
3 = Separator Panel.
4 = Guiding Device, *i.e.* a funnel or "flap" (see Figure 10 and 11).
8 = Combination, record all excluder/separator device types on line 44A (see Figure 11).
9 = Other, record the excluder/separator device type on line 44A.

FISH OUTLET

45. USED?: Record whether a fish outlet (see Figure 11) is used on this gear by placing an "X" next to the appropriate code:

0 = No.
1 = Yes.

46. LENGTH: Record, in whole inches, the length of the fish outlet from the front to the back of the net.

NOTE: If the outlet shape is triangular, record the length of the side of the triangle which runs from the front to back of the net.

47. WIDTH: Record, in whole inches, the width of the fish outlet from side to side of the net.

NOTE: If the outlet shape is triangular, record the length of the side of the triangle which runs from side-to-side in the net.

48. SHAPE: Record the shape of the fish outlet by placing an "X" next to the appropriate code:

00 = Unknown.
01 = Rectangular.
06 = Square.
07 = Diamond.
08 = Triangular.
99 = Other, record the fish outlet shape on line 48A.

49. LOCATION: Record the location of the fish outlet used on this gear by placing an "X" next to the appropriate code:

0 = Unknown.

1 = Top.
2 = Bottom.
3 = Side.
8 = Combination, record all fish outlet locations on line 49A.
9 = Other, record the fish outlet location on line 49A.

COMMENTS

Record any additional information about this gear, *i.e.* unusual arrangements of the gear. Provide a sketch of the bridle arrangement. If more room is needed, use the back of this log, making sure to write "See Back" on the front of the log. Reference each comment with its corresponding field name.